

Application No. 10/775,521
Amendment dated September 23, 2008
Reply to Non-Final Office Action of April 15, 2008

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A switch coupled between a plurality of host units and a device for communicating therebetween and comprising:

a) a first serial advanced technology attachment [[(ATA)]] SATA port coupled to a first host unit and including a first host task file, said first port for causing access, to the device, by the first host unit, the first host task file responsive to commands sent by the first host unit;

b) a second [[serial ATA]] SATA port coupled to a second host unit and including a second host task file, said second port for causing access to the device, by the second host unit, the second host task file responsive to commands sent by the second host unit;

c) a third parallel ATA port including a device task file, coupled to a device, for causing access to the device, by the first or second host units, the device configured to support command queuing and operative to generate an original queue depth value indicative of the number of commands that the device can queue from either of the first or second host units; and

d) an arbitration and control circuit, coupled to said first host task file and said second host task file and said device task file [[first, second and third ports,]] for selecting one of the first host or second host units to concurrently access the device, through the switch, by accepting commands, from either of the first or second host units, at any given time, including when the device is not in an idle state, the arbitration and control circuit being responsive to the original queue depth value and operative to alter the original queue depth value to be a queue depth value that is less than the original queue depth value so that each of the first and second host units is assigned less than the number of commands indicated by the original queue depth value but that the total number of commands that can be queued by the first and second host units remains the same as the original queue depth value thereby misrepresenting the original queue depth value to

- 23 the first and second host units to be less than that which it is thereby preventing commands being
24 lost by an overrun of the original queue depth value by either of the first or second host units.

1 Claim 2 (canceled).

1 Claim 3 (canceled).

1 Claim 4 (cancel).

1 Claim 5 (original): A switch as recited in claim 4 wherein said first, second and third ports are
2 level 4 ports.

1 Claim 6 (original): A switch as recited in claim 1 wherein said device is a storage unit.

1 Claim 7 (original): A switch as recited in claim 1 wherein said switch is employed in an
2 enterprise system.

1 Claim 8 (original): A switch as recited in claim 1 wherein said arbitration and control circuit
2 causes concurrent access of the device by the first and second host units.

1 Claim 9 (original): A switch as recited in claim 1 wherein information, in the form of data,
2 commands or setup, is transferred from the device to the first or second host units through the
3 switch and the information is modified by the switch prior to being received by the first or

4 second host units such that modified information rather than the information is received by the
5 first or second host units.

1 Claim 10 (original): A switch as recited in claim 9 wherein the information is referred to as
2 'identity drive response'.

1 Claim 11 (original): A switch as recited in claim 9 wherein the information is referred to as
2 'Tag.

1 Claim 12 (original): A switch as recited in claim 1 wherein information, in the form of data,
2 commands or setup, is transferred from the first or second host units to the device through the
3 switch and the information is modified by the switch prior to being received by the device such
4 that modified information rather than the information is received by the device.

1 Claim 13 (original): A switch as recited in claim 12 wherein the information is referred to as
2 'Tag'.

1 Claim 14 (original): A switch as recited in claim 13 wherein the arbitration and control circuit
2 include a Tag/Active Mapping Circuit for mapping a host tag to a device tag and inverse
3 mapping for identifying a host.

1 Claim 15 (original): A switch as recited in claim 1 wherein either the first or the second host
2 sends a legacy queue command queued by the device.

Claim 16 (original): A switch as recited in claim 1 wherein either the first or the second host sends a native queue command for execution thereof by the device.

Claim 17 (original): A switch as recited in claim 1 wherein the first, second and third ports are level 3 ports and a Data frame information system (FIS) first-in-first-out (FIFO) and an associated FIFO Control are coupled to the first, second and third ports and located external thereto.

Claim 18 (currently amended): A switch comprising:
a first serial advanced technology attachment ~~[[ATA]]~~ (SATA) port for connection to a first host unit, the first port including a first host task file responsive to commands sent by the first host unit;
a second ~~[[serial ATA]]~~ SATA port for connection to a second host unit, the second port including a second host task file responsive to commands sent by the second host unit;
a third parallel ATA port for connection to a device, the third port including a device task file, the device configured to support command queuing and operative to generate an original queue depth value indicative of the number of commands that the device can queue from either of the first or second host units; and
an arbitration and control circuit coupled to said first host task file and said second host task file and said device task file, [[coupled to the first, second and third ports,]] for selecting either the first host unit or the second host unit to concurrently access the device, through the switch, by accepting commands, from either of the first or second host units, at any given time, including when the device is not in an idle state, the arbitration and control circuit being responsive to the

16 original queue depth value and operative to alter the original queue depth value to be a queue
17 depth value that is less than the original queue depth value so that each of the first and second
18 host units is assigned less than the number of commands indicated by the original queue depth
19 value but that the total number of commands that can be queued by the first and second host
20 units remains the same as the original queue depth value thereby misrepresenting the original
21 queue depth value to the first and second host units to be less than that which it is thereby
22 preventing commands being lost by an overrun of the original queue depth value by either of the
23 first or second host units.

1 Claim 19 (original): A switch as recited in claim 18 wherein the switch is a [[serial ATA]]
2 SATA switch.

1 Claim 20 (cancel).

1 Claim 21 (cancel).

1 Claim 22 (cancel).

1 Claim 23 (original): A switch as recited in claim 18 wherein said device is a storage unit.

1 Claim 24 (original): A switch as recited in claim 18 wherein said switch is employed in an
2 enterprise system.

1 Claim 25 (original): A switch as recited in claim 18 wherein said arbitration circuit causes
2 concurrent access of the device by the first and second host units.

1 Claim 26 (original): A switch as recited in claim 18 wherein information, in the form of data,
2 commands or setup, is transferred from the device to the first or second host units through the
3 switch and the information is modified by the switch prior to being received by the first or
4 second host units such that modified information rather than the information is received by the
5 first or second host units.

1 Claim 27 (original): A switch as recited in claim 26 wherein the information is referred to as
2 'identity drive response'.

1 Claim 28 (original): A switch as recited in claim 26 wherein the information is referred to as
2 'Tag'.

1 Claim 29 (original): A switch as recited in claim 18 wherein information, in the form of data,
2 commands or setup, is transferred from the first or second host units to the device through the
3 switch and the information is modified by the switch prior to being received by the device such
4 that modified information rather than the information is received by the device.

1 Claim 30 (original): A switch as recited in claim 28 wherein the information is referred to as
2 'Tag'.

Claim 31 (currently amended): A switch that is connectable to a first host unit, a second host unit and a device via serial advanced technology attachment [[[ATA]]] (SATA) links, said switch comprising:

a first [[serial ATA]] SATA port for connection to a first host unit, the first port including a first host task file responsive to commands sent by the first host unit;

a second [[serial ATA]] SATA port for connection to a second host unit, the second port including a second host task file responsive to commands sent by the second host unit;

a third parallel ATA port for connection to a device, the third port including a device task file, the device configured to support command queuing and operative to generate an original queue depth value indicative of the number of commands that the device can queue from either of the first or second host units; and

[d.] an arbitration and control circuit, coupled to said first host task file and to said second host task file and said device task file, [[to the first, second and third ports,]] for selecting one of the first or second host units to concurrently access the device through the switch, by accepting commands, from either of the first or second host units, at any given time, including when the device is not in an idle state, the arbitration and control circuit being responsive to the original queue depth value and operative to alter the original queue depth value to be a queue depth value that is less than the original queue depth value so that each of the first and second host units is assigned less than the number of commands indicated by the original queue depth value but that the total number of commands that can be queued by the first and second host units remains the same as the original queue depth value thereby misrepresenting the original queue depth value to the first and second host units to be less than that which it is thereby preventing commands being lost by an overrun of the original queue depth value by either of the first or second host units.

1 Claim 32 (currently amended): A switch as recited in claim 31 wherein the switch is a
2 [[serial ATA]] SATA switch.

1 Claim 33 (cancel).

1 Claim 34 (cancel).

1 Claim 35 (cancel).

1 Claim 36 (original): A switch as recited in claim 31 wherein said device is a storage unit.

1 Claim 37 (original): A switch as recited in claim 31 wherein said switch is employed in an
2 enterprise system.

1 Claim 38 (original): A switch as recited in claim 31 wherein said arbitration and control circuit
2 causes concurrent access of the device by the first and second host units.

1 Claim 39 (original): A switch as recited in claim 31 wherein information, in the form of data,
2 commands or setup, is transferred from the device to the first or second host units through the
3 switch and the information is modified by the switch prior to being received by the first or
4 second host units such that modified information rather than the information is received by the
5 first or second host units.

1 Claim 40 (original): A switch as recited in claim 39 wherein the information is referred to as
2 'identity drive response'.

1 Claim 41 (original): A switch as recited in claim 39 wherein the information is referred to as
2 'Tag'.

1 Claim 42 (original): A switch as recited in claim 31 wherein information, in the form of data,
2 commands or setup, is transferred from the first or second host units to the device through the
3 switch and the information is modified by the switch prior to being received by the device such
4 that modified information rather than the information is received by the device.

- 1 Claim 43 (original): A switch as recited in claim 42 wherein the information is referred to
2 as 'Tag'.
3
4 Claim 44 (new): A switch, as recited in claim 1, wherein the queue depth value reported
5 to each of the first and second host units is no more than half of the original queue depth
6 value.

- 1 Claim 45 (new): A switch, as recited in claim 1, wherein in response to an identify drive
2 command from either of the first or second host units, the arbitration and control circuit is
3 configured to intercept an identify drive response, which is generated by the device in response
4 to the identify drive command, and to replace the original queue depth value with a queue depth
5 value that is no more than one-half that reported by the device.